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EXAMINER	
MISLEH, JUSTIN P	

ART UNIT	PAPER NUMBER
2612	4

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/468,477	PERLOFF, RONALD S.	
	Examiner	Art Unit	
	Justin P Misleh	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1 - 19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1 - 19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 24 January 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1 – 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. in view of Mengel et al.

3. For **Claims 1 and 11**, Morris et al. disclose, as shown in figures 5, 9, and 12 and as stated in columns 3 (lines 7 – 18 and 53 – 62) and 4 (lines 9 – 52), as image capture device and method of operating thereof comprising:

a plurality of pixel sensors (113A, 113B, 113C, and 113D);

a plurality of timers (130A, 130B, 130C, and 130D) individually coupled with at least some of said pixel sensors (113A, 113B, 113C, and 113D);

a plurality of intensity comparators (inherently included; see explanation below) coupled with said timers (130A, 130B, 130C, and 130D) and said at least some of said pixel sensors (113A, 113B, 113C, and 113D).

Furthermore, Morris et al. disclose as stated in column 4 (lines 9 – 52), that in a premetering mode, the timers are started in synchronization with the initialization of the plurality of pixels sensors and are independently stopped based on an increase in brightness determined reflected by the scene. In other words, the plurality of timers (130) individually coupled (e.g.

130A, 130B, 130C, and 130 D) with at least some of the plurality of pixel sensors (individually coupled respectively with the plurality of pixel sensors: 113A, 113B, 113C, and 113D) are stopped when the brightness intensity of a certain number of pixel sensors (118) within the plurality of pixel sensors (113A, 113B, 113C, and 113D) exceeds a certain level (intensity threshold). For instance, the timer 130A would stop timing if a certain number of pixel sensors (118) in the plurality of pixel sensors (113A) increase to a brightness that is greater than a predetermined brightness threshold, as determined by an inherently included intensity comparator. Morris et al. does not show intensity comparators; however, it would be impossible to measure the intensities of the plurality of pixel sensors so as to determine if they exceed a predetermined threshold if intensity comparators were not included in Morris et al.

However, Morris et al. does not disclose a flash coupled with said timers, wherein the timers are started when said flash fires, and the increase in brightness of a scene is a result of the flash. On the other hand, Mengel et al. also disclose a plurality of pixel sensors, a plurality of timers, and a flash. As shown in figures 1 and 2 and as stated in columns 4 (lines 24 – 54), 5 (lines 49 – 65), Mengel et al. disclose a flash (5) coupled with the plurality of pixel sensors (9) wherein the flash (5) triggers (8) the plurality of pixel sensors (9) to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene (1). Furthermore, Mengel et al. disclose firing the flash (5) a plurality of times using short light pulses to fully illuminate the scene. As stated in column 1 (lines 26 – 31), at the time the invention was made, one with ordinary skill in the art would have been motivated to include a flash (5) coupled with the plurality of pixel sensors (9) wherein the flash (5) triggers (8) the plurality of pixel sensors (9) to begin integrating for a certain duration of time, thus causing an

increase in brightness reflected by a scene (1), as taught by Mengel et al., in the image capture device, disclosed by Morris et al., as a means to provide an apparatus for recording a three-dimensional range image of spatial objects. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to include a flash coupled with the plurality of pixel sensors wherein the flash triggers the plurality of pixel sensors to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene, as taught by Mengel et al., in the image capture device, disclosed by Morris et al.

4. As for **Claims 2 and 12**, Morris et al. disclose, as stated in column 7 (lines 22 – 26), an image capture device and method of operating thereof recited in Claims 1/11, respectively, further comprising:

a first memory (128) coupled with said plurality of timers wherein said first memory stores delay data from at least some of said plurality of timers.

Claims 2 and 12 are broad in the fact the requirements of the claim do not link the delay data to the timers of Claims 1/11, respectively, nor do the requirements of the claim define what delay data is. In the broadest reasonable interpretation, the Examiner is free to interpret delay data as any data stored in a first memory. Thus, Morris et al. disclose the storage of time data in a first memory (128).

5. As for **Claims 3 and 13**, Morris et al. disclose, as stated in column 8 (lines 1 – 10), an image capture device and method of operating thereof as recited in Claims 2/12, respectively, further comprising:

a converter (microprocessor 262) coupled with said first memory (128 via an interface) and a third memory (inherent to microprocessor 262 to have a working memory representative of

the claimed third memory), wherein said converter (262) receives said delay data from said first memory (128) and stores distance data in said third memory (inherent in the microprocessor 262).

Claims 3 and 13 are also broad in the fact the requirements of the claim do not link the distance data to the timers of Claims 1/11, respectively, or the delay data of Claims 2 and 12, respectively, nor do the requirements of the claim define what distance data is. In the broadest reasonable interpretation, the Examiner is free to interpret distance data as any data stored in a third memory. Thus, Morris et al. disclose the storage of time data in a first memory (128) and transformation of time data into integration data in the microprocessor (262) for storage in a third memory (262). Furthermore, the requirements of the claim do no more to distinguish the first memory from the third memory other than as to the type of data they store.

6. As for **Claims 4 and 14**, Morris et al. disclose, as stated in column 7 (lines 41 – 44), an image capture device and method of operating thereof as recited in Claims 1/11, respectively, further comprising:

a second memory (263) coupled with said plurality of pixel sensors wherein said second memory (263) stores image data from at least some of said plurality of pixel sensors.

7. As for **Claim 5**, Morris et al. in view of Mengel et al. show that it would have been obvious to at least include a flash to illuminate the scene; however, Mengel et al. do not disclose wherein the flash is an infrared flash. **Official Notice** is taken that both the concepts and the advantages of including an infrared flash are well known and expected in the art. At the time the invention was made, it would have been obvious to provide an infrared flash as a means to reduce the red-eye effect associated with a visible flash.

8. For **Claim 6**, Morris et al. disclose, as shown in figures 5, 9, and 12 and as stated in columns 3 (lines 7 – 18 and 53 – 62) and 4 (lines 9 – 52), as image capture device comprising:

a plurality of pixel sensors (113A, 113B, 113C, and 113D);

a plurality of timers (130A, 130B, 130C, and 130D) individually coupled with at least some of said pixel sensors (113A, 113B, 113C, and 113D);

a plurality of intensity comparators (inherently included; see explanation below) coupled with said timers (130A, 130B, 130C, and 130D) and said at least some of said pixel sensors (113A, 113B, 113C, and 113D).

Furthermore, Morris et al. disclose as stated in column 4 (lines 9 – 52), that in a premetering mode, the timers are started in synchronization with the initialization of the plurality of pixels sensors and are independently stopped based on an increase in brightness determined reflected by the scene. In other words, the plurality of timers (130) individually coupled (e.g. 130A, 130B, 130C, and 130 D) with at least some of the plurality of pixel sensors (individually coupled respectively with the plurality of pixel sensors: 113A, 113B, 113C, and 113D) are stopped when the brightness intensity of a certain number of pixel sensors (118) within the plurality of pixel sensors (113A, 113B, 113C, and 113D) exceeds a certain level (intensity threshold). For instance, the timer 130A would stop timing if a certain number of pixel sensors (118) in the plurality of pixel sensors (113A) increase to a brightness that is greater than a predetermined brightness threshold, as determined by an inherently included intensity comparator. Morris et al. does not show intensity comparators; however, it would be impossible to measure the intensities of the plurality of pixel sensors so as to determine if they exceed a predetermined threshold if intensity comparators were not included in Morris et al.

However, Morris et al. does not disclose an electrical connection for an external flash coupled with said timers, wherein the timers are started when said flash fires, and the increase in brightness of a scene is a result of the flash. On the other hand, Mengel et al. also disclose a plurality of pixel sensors, a plurality of timers, and a flash. As shown in figures 1 and 2 and as stated in columns 4 (lines 24 – 54), 5 (lines 49 – 65), Mengel et al. disclose an electrical connection for an external flash (5) coupled with the plurality of pixel sensors (9) wherein the flash (5) triggers (8) the plurality of pixel sensors (9) to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene (1). As stated in column 1 (lines 26 – 31), at the time the invention was made, one with ordinary skill in the art would have been motivated to include an electrical connection for an external flash (5) coupled with the plurality of pixel sensors (9) wherein the flash (5) triggers (8) the plurality of pixel sensors (9) to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene (1), as taught by Mengel et al., in the image capture device, disclosed by Morris et al., as a means to provide an apparatus for recording a three-dimensional range image of spatial objects. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to include an electrical connection for an external flash coupled with the plurality of pixel sensors wherein the flash triggers the plurality of pixel sensors to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene, as taught by Mengel et al., in the image capture device, disclosed by Morris et al.

9. As for **Claim 7**, Morris et al. disclose, as stated in column 7 (lines 22 – 26), an image capture device recited in Claim 6 further comprising:

a first memory (128) coupled with said plurality of timers wherein said first memory stores delay data from at least some of said plurality of timers.

Claim 7 is broad in the fact the requirements of the claim do not link the delay data to the timers of Claim 6 nor do the requirements of the claim define what delay data is. In the broadest reasonable interpretation, the Examiner is free to interpret delay data as any data stored in a first memory. Thus, Morris et al. disclose the storage of time data in a first memory (128).

10. As for **Claim 8**, Morris et al. disclose, as stated in column 8 (lines 1 – 10), an image capture device as recited in Claim 7 further comprising:

a converter (microprocessor 262) coupled with said first memory (128 via an interface) and a third memory (inherent to microprocessor 262 to have a working memory representative of the claimed third memory), wherein said converter (262) receives said delay data from said first memory (128) and stores distance data in said third memory (inherent in the microprocessor 262).

Claim 8 is also broad in the fact the requirements of the claim do not link the distance data to the timers of Claim 6 or the delay data of Claim 7 nor do the requirements of the claim define what distance data is. In the broadest reasonable interpretation, the Examiner is free to interpret distance data as any data stored in a third memory. Thus, Morris et al. disclose the storage of time data in a first memory (128) and transformation of time data into integration data in the microprocessor (262) for storage in a third memory (262). Furthermore, the requirements of the claim do no more to distinguish the first memory from the third memory other than as to the type of data they store.

11. As for **Claim 9**, Morris et al. disclose, as stated in column 7 (lines 41 – 44), an image capture device as recited in Claim 1 further comprising:

a second memory (263) coupled with said plurality of pixel sensors wherein said second memory (263) stores image data from at least some of said plurality of pixel sensors.

12. As for **Claim 10**, Morris et al. in view of Mengel et al. show that it would have been obvious to at least include a flash to illuminate the scene; however, Mengel et al. do not disclose wherein the flash is an infrared flash. **Official Notice** is taken that both the concepts and the advantages of including an infrared flash are well known and expected in the art. At the time the invention was made, it would have been obvious to provide an infrared flash as a means to reduce the red-eye effect associated with a visible flash.

13. For **Claim 15**, Morris et al. disclose, as shown in figures 5, 9, and 12 and as stated in columns 3 (lines 7 – 18 and 53 – 62) and 4 (lines 9 – 52), as image capture device comprising:

means for capturing light intensity values of pixels (113A, 113B, 113C, and 113D);

means for comparing light intensity values of pixels (inherently included; see explanation below); and

means for timing (130A, 130B, 130C, and 130D) how long it takes light reflected from an object to reach said means for capturing light intensity values of pixels (113A, 113B, 113C, and 113D).

Furthermore, Morris et al. disclose as stated in column 4 (lines 9 – 52), that in a premetering mode, the means for timing is started in synchronization with the initialization of the means for capturing light and is independently stopped based on an increase in brightness determined reflected by the scene. In other words, the means for timing (130) is individually

coupled (e.g. 130A, 130B, 130C, and 130 D) with the means for capturing (individually coupled respectively with the means for capturing: 113A, 113B, 113C, and 113D) are stopped when the brightness intensity of a certain number of pixel sensors (118) of the means for capturing (113A, 113B, 113C, and 113D) exceeds a certain level (intensity threshold). For instance, the means for timing 130A would stop timing if a certain number of pixel sensors (118) of the means for capturing (113A) increase to a brightness that is greater than a predetermined brightness threshold, as determined by an inherently included means for comparing intensities. Morris et al. does not show means for comparing intensities; however, it would be impossible to measure the intensities of the means for capturing so as to determine if they exceed a predetermined threshold if means for comparing intensities were not included in Morris et al.

However, Morris et al. does not disclose means for firing a flash coupled with said means for timing, wherein the means for timing is started when means for firing a flash fires the flash, and the increase in brightness of a scene is a result of the flash means. On the other hand, Mengel et al. also disclose means for capturing, means for timing, and a mean for firing a flash. As shown in figures 1 and 2 and as stated in columns 4 (lines 24 – 54), 5 (lines 49 – 65), Mengel et al. disclose a means for firing a flash (5) coupled with the means for capturing (9) wherein the means for firing a flash (5) triggers (8) the means for capturing (9) to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene (1). As stated in column 1 (lines 26 – 31), at the time the invention was made, one with ordinary skill in the art would have been motivated to include means for firing a flash (5) coupled with the means for capturing (9) wherein the means for firing a flash (5) triggers (8) the means for capturing (9) to begin integrating for a certain duration of time, thus causing an increase in brightness reflected

by a scene (1), as taught by Mengel et al., in the image capture device, disclosed by Morris et al., as a means to provide an apparatus for recording a three-dimensional range image of spatial objects. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to include means for firing a flash coupled with the means for capturing wherein the means for firing a flash triggers the means for capturing to begin integrating for a certain duration of time, thus causing an increase in brightness reflected by a scene, as taught by Mengel et al., in the image capture device, disclosed by Morris et al.

14. As for **Claim 16**, Morris et al. disclose, as stated in column 7 (lines 22 – 26), an image capture device recited in Claim 15 further comprising:

means for storing (128) results from said means for timing.

15. As for **Claim 17**, Morris et al. disclose, as stated in column 8 (lines 1 – 10), an image capture device as recited in Claim 16 further comprising:

means for converting (microprocessor 262) results from said means for timing to distance data.

Claim 17 is broad in the fact the requirements of the claim do not link the distance data to the results of the means for timing of Claims 15 or 16 nor do the requirements of the claim define what distance data is. In the broadest reasonable interpretation, the Examiner is free to interpret distance data as any data converted by the means for converting from to the results of the means for timing. Thus, Morris et al. disclose means for storing the results of the means for timing data and transformation of the results into integration data in the means for converting (262).

16. As for **Claim 18**, Morris et al. disclose, as stated in column 8 (lines 1 – 10), an image capture device as recited in Claim 17 further comprising:

means for storing (inherent to converting microprocessor 262 to have a working memory representative of the claimed means for said distance data).

17. As for **Claim 19**, Morris et al. disclose, as stated in column 7 (lines 41 – 44), an image capture device as recited in Claim 18 further comprising:

means for storing (263) image data from said means for capturing light intensity values.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following is brief description of prior art:

- US 6,721,007 B1 discloses a three-dimensional image capturing device that measures the distance to a subject scene using the illumination of an illumination device. Furthermore, '007 discloses that the initialization of the image sensor is synchronized with the firing of the flash. Distance is computed from reflection time and the speed of light.
- US 6,580,454 B1 discloses an Active Pixel Sensor wherein a digital count is kept and stored in each pixel cell that is representative of the integration time of each pixel cell. Furthermore, the Active Pixel Sensor is comprised of an intensity comparator used in deciding an integration time for each pixel cell.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:30 PM and on alternating Fridays from 7:30 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
April 30, 2004

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